

## Earth Materials

### 1-4 The student will demonstrate an understanding of the properties of Earth materials. (Earth Science)

#### 1-4.1 Recognize the composition of Earth (including rocks, sand, soil, and water).

**Taxonomy level:** 1.1-A Remember Factual Knowledge

**Previous/Future knowledge:** This is a foundational concept that students will develop further in future grades. In 3<sup>rd</sup> grade (3-3.1), students will classify rocks as sedimentary, metamorphic, or igneous and will identify the components of soil.

**It is essential for students to** know that Earth is made of different materials, including rocks, sand, soil, and water. An *Earth material* is defined as a resource that comes from Earth. Types of Earth materials include:

#### *Rocks*

- Rocks are hard, solid, nonliving materials that make up Earth.
- Rocks come in many different shapes, sizes, and colors and can be classified into different groups based on similar characteristics.

#### *Sand*

- Sand is made of tiny pieces of rock.

#### *Soil*

- Soil is the loose, top layer of Earth's surface made up of pieces of rock, sand, water, air, and pieces of dead organisms.
- The type of soil used the most for supporting life is the *topsoil*.
- It is used to grow plants.

#### *Water*

- Water is one of our most valuable resources on Earth.
- Every living thing needs water to survive.
- Water covers most of Earth, but only a small portion of it can be used for drinking.
- It can be salt water or fresh water.

**It is not essential for students to** use the classification terms for rocks at this grade level. Students do not need to identify the layers of soil (soil profile).

#### **Assessment Guidelines:**

The objective of this indicator is to *recognize* the composition of Earth materials; therefore, the primary focus of assessment should be to remember the characteristics about rocks, sand, soil, and water. However, appropriate assessments should also require students to *identify* an Earth material by its characteristics; or *recall* what an Earth material is.

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### 1-4 The student will demonstrate an understanding of the properties of Earth materials. (Earth Science)

#### 1-4.2 Classify rocks and sand by their physical appearance.

**Taxonomy level:** 2.3-A Classify Factual Knowledge

**Previous/Future knowledge:** This is a foundational concept that students will develop further in future grades. In 3<sup>rd</sup> grade (3-3.1), students will classify rocks as sedimentary, metamorphic, or igneous and will identify the components of soil.

**It is essential for students to** know that rocks and sand can be classified by their physical appearance.

- Examples of physical appearances used to classify rocks and sand might include color, size and shape, texture (rough or smooth), shiny or dull.

**It is not essential for students to** learn about fossil rocks at this grade level. Students do not need to classify rocks as sedimentary, igneous, or metamorphic.

#### **Assessment Guidelines:**

The objective of this indicator is to *classify* rocks and sand by their physical properties; therefore, the primary focus of assessment should be to determine that something belongs to a category based on its properties. However, appropriate assessments should also require students to *compare* different rocks or sand samples; or *identify* a rock based on given properties.

## Earth Materials

### 1-4 The student will demonstrate an understanding of the properties of Earth materials. (Earth Science)

#### 1-4.3 Compare soil samples by sorting them according to properties (including color, texture, and the capacity to nourish growing plants.

**Taxonomy level:** 2.6-A Remember Factual Knowledge

**Previous/Future knowledge:** This is a foundational concept that students will develop further in future grades. In kindergarten (K-5.1), texture was defined as the way something feels to the touch. In 3<sup>rd</sup> grade (3-3.1), students will classify rocks as sedimentary, metamorphic, or igneous and will identify the components of soil.

**It is essential for students to** know that different soils have different properties. Soils can be sorted by color, texture, and the capacity to nourish growing plants.

#### *Color*

- Topsoil is usually very dark.
- Other soils can come in many different colors depending on the types of rocks that make up the soil.

#### *Texture*

- Soils have different textures.
- For example, sandy soil feels rough and gritty.

#### *Capacity to nourish growing plants*

- The ability for soil to grow plants depends on how much water it will hold and the types of nutrients in it.
- For example, topsoil holds enough water and contains the proper nutrients for certain plants to grow.

**It is not essential for students to** go beyond making a comparison of soils using the properties mentioned above.

#### **Assessment Guidelines:**

The objective of this indicator is to *compare* soil samples according to their properties; therefore, the primary focus of assessment should be to detect similarities or differences between different types of soil. However, appropriate assessments should also require students to *classify* different soil samples by their color, texture, or capacity to grow plants.

## Earth Materials

### 1-4 The student will demonstrate an understanding of the properties of Earth materials. (Earth Science)

#### 1-4.4 Recognize the observable properties of water (including the fact that it takes the shape of its container, flows downhill, and feels wet).

**Taxonomy level:** 1.1-A Remember Factual Knowledge

**Previous/Future knowledge:** This is a foundational concept that students will develop further in future grades. In 2<sup>nd</sup> grade (2-4), students will study ways that matter can change shape (for example from a solid to a liquid). In 3<sup>rd</sup> grade (3-4.1), students will classify different forms of matter, one of these being a liquid. This concept of the observable properties of water will also provide foundation for the study of Earth processes in future earth science topics.

**It is essential for students to** know that water as an Earth material has observable properties. These properties include:

- Water is a liquid that takes the shape of its container. For example, water on Earth may be found in containers known as lakes, ponds, or oceans.
- Water will flow downhill. Water flows in streams and rivers toward the ocean.
- Water feels wet. Water is needed by all living things.

**It is not essential for students to** observe water changing from a solid to a liquid.

#### **Assessment Guidelines:**

The objective of this indicator is to *recognize* the observable properties of water; therefore, the primary focus of assessment should be to remember that water takes the shape of its container, flows downhill, and feels wet. However, appropriate assessments should also require students to *recall* from a picture or drawing examples of water and its observable properties.

## Earth Materials

### 1-4 The student will demonstrate an understanding of the properties of Earth materials. (Earth Science)

#### 1-4.5 Illustrate the locations of water on Earth by using drawings, maps, or models.

**Taxonomy level:** 2.2-A Understand Factual Knowledge

**Previous/Future knowledge:** This is a foundational concept that students will develop further in future grades. In 3<sup>rd</sup> grade (3-3.5), students will illustrate Earth's saltwater and freshwater features (including oceans, seas, rivers, lakes, ponds, streams, and glaciers).

**It is essential for students to** know that Earth is made of land and water.

- Water surrounds the land on Earth.
- It is found in many locations including oceans, seas, rivers, lakes, ponds, or streams.
- Examples of these locations can be seen on drawings, maps, or models.
- When water is represented on maps, it is usually colored blue.

**It is not essential for students to** identify the names of oceans, seas, rivers, lakes, ponds, or streams but they do need to identify all of the above as locations of water.

#### **Assessment Guidelines:**

The objective of this indicator is to *illustrate* locations of water on Earth; therefore, the primary focus of assessment should be to find a specific example of water on Earth on a drawing, map, or model. However, appropriate assessments should also require students to *identify* locations of water on Earth by using drawings, maps, or models.

## Earth Materials

### 1-4 The student will demonstrate an understanding of the properties of Earth materials. (Earth Science)

#### 1-4.6 Exemplify Earth materials that are used for building structures or for growing plants.

**Taxonomy level:** 2.2-A Understand Factual Knowledge

**Previous/Future knowledge:** This is a foundational concept that students will develop further in future grades. Students have learned about nutrients from the soil (1-1.2) and the value of topsoil (1-4.1, 1-4.3). In 3<sup>rd</sup> grade (3-3.1), students will classify types of soil based on its properties. In 7<sup>th</sup> grade (7-3.6), students will classify resources as renewable or nonrenewable.

**It is essential for students to know** that Earth materials can be used for building structures or for growing plants. Examples of some ways that Earth materials can be used include:

<i>Rocks</i>	Making roads, walls, or buildings
<i>Sand</i>	Making glass, growing certain types of plants (for example a desert plant)
<i>Soil</i>	Making bricks, growing certain types of plants (for example a forest plant)
<i>Water</i>	Growing plants must take in water through their roots

But humans are not the only ones that use Earth materials. Birds use twigs, leaves, soil, and straw to make their homes and some insect homes are made from soil.

**It is not essential for students to know** the names of specific Earth materials (for example granite, kaolin, slate).

#### **Assessment Guidelines:**

The objective of this indicator is to *exemplify* Earth materials that are used for building structures or growing plants; therefore, the primary focus of assessment should be to give examples of Earth materials that can be used as building materials or for growing plants. However, appropriate assessments should also require students to *identify* Earth materials used for building structures or growing plants; or *illustrate* through drawings or descriptions Earth materials that are used for buildings or growing plants.